

Comprehensive Monitoring Well Design & Installation Guide

For: Drilling Contractors and the Naco Sanitary District

Date: January 10, 2026

Purpose: To integrate federal technical standards ([EPA SESDGUID-101-R2](#)) with Arizona-specific regulatory requirements for the proper design, installation, and decommissioning of groundwater monitoring wells.

1.0 Executive Summary

This report synthesizes the U.S. EPA's technical guidance for monitoring wells with the mandatory statutes and regulations of the State of Arizona. For any project within the Naco Sanitary District, **both sets of standards must be met**. The EPA provides the methodological foundation, while Arizona law (primarily enforced by the Arizona Department of Water Resources - ADWR) sets legally binding construction, permitting, and abandonment specifications. Failure to comply with Arizona regulations can result in enforcement actions, fines, and invalidated data.

2.0 Governing Standards & Regulations

Authority	Document/Code	Role & Relevance
Federal (Technical Guide)	EPA SESDGUID-101-R2, Design and Installation of Monitoring Wells	Provides nationally accepted technical procedures for design, drilling, construction, development, and decommissioning. It is a guideline, not law.
Arizona State (Law)	A.A.C. Title 12, Chapter 15 (ADWR Well Construction Rules)	THE LEGAL STANDARD. Mandates minimum construction, material, and abandonment requirements for all wells, including monitoring wells.

Authority	Document/Code	Role & Relevance
Arizona State (Law)	A.R.S. Title 45	Grants ADWR its regulatory authority over all well construction and groundwater.
Arizona State (Guidance/Permit)	ADEQ Aquifer Protection Permit (APP) Rules	May impose additional well construction or sampling requirements if wells are part of a permitted facility's monitoring network.

3.0 Critical Integration: EPA Guidelines and Arizona Law

The following table highlights key design and installation phases, showing how EPA technical guidance must be applied within Arizona's regulatory framework.

Phase	EPA Technical Guidance (SESDGUID-101-R2)	Arizona Regulatory Requirement (A.A.C. R12-15-811 et al.)	Action for Compliance in Naco
Pre-Drilling & Permitting	Sec 1.2: Scope allows for procedural deviation with documentation.	ADWR Permit Required. Notice of Intent to Drill (Form 55-40/55-44A) must be filed and approved.	District/Driller: File NOI with ADWR before any drilling. Check for local (Cochise County/Naco) requirements.
Drilling Method Selection	Sec 2.2: Prefers methods that temporarily case the hole (HSA, Sonic) to minimize cross-contamination. Discourages mud rotary.	No specific method dictated, but method must not compromise aquifer integrity.	Driller: Select HSA or Sonic where possible. If mud rotary is unavoidable, a rigorous justification and QA/QC plan for drilling fluids is required.
Casing & Screen Materials	Sec 2.5.2: Prefers stainless steel or NSF Standard 14 PVC based on contaminant compatibility.	Only steel or thermoplastic (PVC) casing allowed unless a variance is obtained. Must be new, unused pipe.	Driller/District: Specify ASTM or NSF-approved PVC or stainless steel. Ensure material is compatible with contaminants of concern.
Annular Space &	Sec 2.3.5: Prefers 30%	MANDATORY SURFACE	Driller: This is non-

Phase	EPA Technical Guidance (SESDGUID-101-R2)	Arizona Regulatory Requirement (A.A.C. R12-15-811 et al.)	Action for Compliance in Naco
Grouting (Most Critical)	solids bentonite grout. Discusses neat cement and cement-bentonite mixes.	<p>SEAL: A steel-casing & cement-grout surface seal is required.</p> <ul style="list-style-type: none"> • Steel casing min. 20 ft long. • Cement grout placed in one continuous pour from seal bottom to land surface. • Min. annular space for grout: 1½ inches. 	negotiable. The well design must include a 20+ ft steel surface casing surrounded by a poured cement grout seal. The rest of the annular space (below the seal) can use bentonite grout per EPA guide.
Well Screen Placement	Sec 2.1: Screen placed in zone of interest.	A monitor well may be screened up to 10 ft above the highest seasonal static water level for contaminant monitoring.	Driller/District: Use historical water level data to position screen. Screen can be placed slightly above the water table to monitor the vadose zone or fluctuating plume.
Surface Completion & Marking	Sec 2.3.6-8: Describes protective casing, concrete pad, bumper guards.	Casing must extend ≥1 ft above ground. Well must be identified as a monitor well with its ADWR registration number on the vault or casing.	Driller: Install a locking, protective outer casing over the inner well. Pour a sloped concrete pad. Permanently label the well with its ADWR number.
Well Development	Sec 2.7: Develop until water is clear and parameters stabilize. Avoid aggressive air surging.	Required to produce clear water before putting the well into service. ADEQ may require development until turbidity is minimal for sampling.	Driller: Use bailing, pumping, or surging. Document development duration, methods, and water clarity in the driller's log.

Phase	EPA Technical Guidance (SESDGUID-101-R2)	Arizona Regulatory Requirement (A.A.C. R12-15-811 et al.)	Action for Compliance in Naco
Decommissioning (Abandonment)	Sec 2.8: Prefer complete removal of casing, then pressure grouting.	Strictly regulated by ADWR. Requires a Well Abandonment Completion Report (Form 55-38). Typically requires pressure grouting with cement or bentonite-cement from bottom to top.	District: Must plan for proper abandonment. Driller: Follow ADWR's Well Abandonment Handbook. Never just backfill with cuttings. File abandonment report with ADWR.

4.0 Step-by-Step Procedure for Naco Sanitary District Well Replacements

Phase 1: Planning & Design (District & Driller)

1. Define monitoring objectives (what, where, why).
2. Review site hydro-geology and contaminant data.
3. **Design well:** Select screen interval, length, and materials based on EPA guide and Arizona screen-placement rule.
4. **Incorporate Arizona Surface Seal:** Design the top 20+ feet of the well with a steel casing and cement grout annular seal.
5. **File ADWR Notice of Intent to Drill.**

Phase 2: Drilling & Construction (Driller)

1. Mobilize, implement site-specific Health and Safety Plan (HASP).
2. Use ADWR-licensed drilling personnel.
3. Drill borehole using approved method (prefer HSA/Sonic).
4. Construct well per design: install screen, filter pack, bentonite seal (below surface seal), and **the mandatory Arizona cement surface seal.**
5. Install protective casing, concrete pad, and permanent labeling with ADWR well number.
6. Complete and submit **ADWR Well Completion Report.**

Phase 3: Development & Verification (Driller/District)

- 1.Allow grout to cure (min. 24 hrs).
- 2.Develop well using appropriate methods until water is clear.
- 3.Document all development activities and water quality parameters.

Phase 4: Sampling & Operation (District)

- 1.Allow well to equilibrate (1-14 days post-development).
- 2.Sample per SESDPROC-301 or ADEQ-approved plan.

Phase 5: Decommissioning (District & Driller)

- 1.Notify ADWR of intent to abandon.
- 2.Seal well per **ADWR abandonment rules** (pressure grouting).
- 3.Submit **ADWR Well Abandonment Completion Report**.

5.0 Summary & Recommendations

For the Naco Sanitary District:

- The NSD role is to ensure **regulatory compliance**. All well projects must be permitted through ADWR. Designs must explicitly include the Arizona-mandated surface seal. Maintain all permits, completion reports, and abandonment filings. Coordinate with ADEQ if wells are linked to an APP.

For the Drilling Contractor:

- The Drilling Contractor is the **executing agent of compliance**. The Driller must hold an ADWR drillers license. The field work must build the well to the design that incorporates both EPA best practices and current Arizona law. The **20+ ft cement surface seal is a legal requirement, not a suggestion**. The Driller's documentation (logs, reports) is the legal record of compliance.

Joint Responsibility:

- Communication is critical**. The Naco Sanitary District must provide designs that meet Arizona law. The driller must flag any field condition that prevents following the approved design and seek guidance before proceeding.
- Always default to the stricter standard**. Where Arizona law is more specific or stringent than the EPA guide (e.g., grouting), Arizona law governs.

Primary Arizona Contacts:

- ADWR (Well Construction/Permitting):** (602) 771-8500 www.azwater.gov
- ADEQ (Water Quality/Permits):** (602) 771-2300 www.azdeq.gov
- Naco Sanitary District:** (520) 353-4372 nacosanitary.org

•**Disclaimer:** This report is an installation guide prepared by the Naco Sanitary District. NSD consulted the most current official texts of EPA SESDGUID-101-R2, the Arizona Administrative Code, and ADWR/ADEQ guidance for the replacement of two monitor wells. These guidelines are subject to change by either Federal or Arizona regulations and laws.